

## INFORMATION REPORT

CD NO.

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COUNTRY USSR (Yaroslavl Oblast)

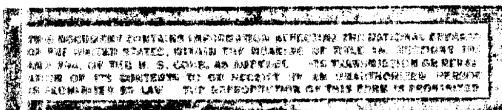
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SUBJECT Yaroslavl Rubber Combine in Yaroslavl

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SUPPLEMENT TO  
REPORT NO

THIS IS UNEVALUATED INFORMATION

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1. The Yarak Rubber Combine in Yaroslavl (N57-35, E39-50) was located in an industrial area near the northern outskirts of Yaroslavl and north of the double-track Yaroslavl - Vologda (N59-20, E39-40) railroad line. The industrial area extended westward from the right bank of the Volga River for several kilometers. Several spur tracks led from the area of the Combine to the railroad line and, farther northwestward, to a railroad stop on the Yaroslavl - Rybinsk (N58-03, E38-50) (Shcherbakov) railroad line. Just south of the Combine was a railroad stop for commuter trains. The Yaroslavl - Rybinsk highway paralleled plant on the west for about 400 meters. There was a streetcar line terminal at the junction of this highway and the main railroad line. One of the main streets of the town passed under the railroad line and ended at the main entrance gate of the Combine.
2. The Rubber Combine was called Yarak, which is an abbreviation of Yaroslavskiy Kuchuko-Azbestovyy Kombinat (Yaroslavl Rubber Asbestos Combine). The department for the production of synthetic rubber was called SK 1. The Combine was built from 1930 to 1932 on an area of about 1.5 square kilometers. Since then, the Combine has been repeatedly expanded and reconstructed, particularly in 1941 and 1942 and immediately after the war. An air raid in 1943 caused very little damage. During the war, some installations were evacuated from various departments, but were soon returned. From 1946 to 1948, the plant installations were extensively replaced and supplemented by machinery dismantled in Germany.
3. Prior to 1948, the Combine was under a single, central management. In early 1948, following alleged mismanagement of production, which led to a state investigation of the plant management, the various departments were placed under special managers and leading engineers although the central administration for the entire combine was retained.
4. The fenced-in area of the Combine remained the same, but the number of buildings increased considerably. The main installation was the synthetic rubber department which formerly operated on the divinyl process of Professor Lebedev (fmu), using an ethyl alcohol base. Since 1947 or 1948, the plant has had its own alcohol distillery. Alcohol supplied by other plants was also purified in the Combine.

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The synthetic rubber installation consisted of the catalysis, condensation, adsorption, and polymerization departments. After the war, a new installation was added for the production of rubber using an acetylene base. The catalysts required were produced in the Combine itself. Metallic sodium (Na) was used as a catalyst in the production of divinyl rubber.

5. In addition to synthetic rubber, natural rubber and large amounts of reclaimed rubber were also processed in the Combine. Pure natural rubber was processed in Yaroslavl by an alkaline process in which the crude mass was inflated by the use of a caustic soda solution and later was neutralized with sulphuric acid. The synthetic waste rubber was treated with special softeners. This method neutralized the effects of the previously used thermal treatment. The reclaimed material had elasticity and other favorable physical properties. Various mixtures of colophony, various kinds of bitumen, machine and shale oils were used as softeners. Reclaimed rubber was used mainly for the production of rubber soles and, on a small scale, was used as an ingredient in rubber produced for tires.
6. A number of independently operated enterprises of the Combine produced a large percentage of the various agents required for the various methods of processing rubber. A cord factory, equipped with an installation for cleaning raw fibers, a spinning mill, and a weaving mill, produced textile linings for automobile tires and for reinforcing other rubber products. Since 1934, the Combine has had its own carbon black-producing plant. Carbon black was added to all raw rubber materials as a most important age-resisting agent. Large supplies of carbon black were also delivered to other industrial plants. Another carbon black-producing plant was built after the war 1 km north of the Combine on the road to Rybinsk.<sup>1</sup>
7. The most important installation for finished products was the department for the manufacture of automobile and aircraft tires. The department included an installation for dressing chalk, kaolin, talcum, and other powder products; a calender; a rolling, a cutting, and a gluing installation; and a large vulcanizing shop. There was also a machine shop with a foundry where all necessary repairs were made and where press molds for tire shaping were produced. The shop producing vehicle tire tubes was equipped with rolling trains, binding and spraying installations, and a vulcanizing installation. Until early 1949, rubber soles and heels were produced in a shop which was equipped with mixers, rolling trains, calenders, presses, and a vulcanizing installation. As this branch of the production expanded considerably, a subsidiary plant, consisting of eight buildings, was put into operation in early 1949. This subsidiary plant was located south of the Kotorosl River, a branch of the Volga which flowed through Yaroslavl. Its annual production was scheduled to include 50,000 pairs of rubber shoes, 50,000 pairs of rubber boots, 60,000 tons of rubber soles and heels, 10,000 meters of transmission belts, and rubber items for medical and chemical purposes.
8. Among the auxiliary enterprises of the Combine was a department for processing asbestos. This department mainly produced packings and brake linings for the nearby automobile plant. There was also an oxygen installation which had a daily capacity of about 1,500 cubic meters in mid-1949. A rubber solution was produced in an installation equipped with four stirring devices. Another department, which was under special guard, produced catalyzers, vulcanization accelerators, and softeners. A department equipped with numerous machine tools supplied spare parts to all enterprises of the Combine and made all the necessary repairs. The Combine had a steam heat and power plant equipped with five peat and coal-fired steam boilers which also supplied power to the remaining industrial plants and to the northern area of Yaroslavl.

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9. In late 1944, the Combine had the following daily production:

60 to 105 tons of synthetic rubber.  
 90 to 120 tons of reclaimed rubber  
 3,600 automobile tires.  
 900 aircraft tires.  
 3,000 to 5,000 automobile tire tubes.  
 60 tons of rubber soles.  
 670 square meters of insulating material.  
 2,200 gas mask headpieces.  
 1,800 kg of rubber solution.  
 1,440 kg of asbestos adhesives.

The Combine also produced substantial amounts of solid rubber tires, asbestos products, carbon black rubber plates (Gummi-Belagplatten) for caterpillar vehicles, and compressed-air tubes. After 1948, the Combine also supplied low-pressure tires. In early 1949, the annual tire production was approximately 800,000 tires although about 4,500,000 tires were scheduled to be produced in 1947 and 1948, the quality of the tires supplied by the Combine was so poor that legal proceedings were initiated against the responsible department managers.

10. The basic raw materials used in the Combine were ethyl alcohol and calcium carbide. Imported natural rubber and latex produced from *Kok-Sagyz* roots and other domestic rubber plants were added to the raw synthetic rubber material. Part of the alcohol was distilled in plant-owned installations. All the remaining raw materials, such as, crude oil for the production of carbon black, calcium carbide for the production of carbon black and bone, basic materials for the production of catalysts, solvents and softeners, asbestos products etc., had to be supplied from outside sources. Large amounts of waste rubber were processed in the reclaiming department. Heat for the power plant came from the rich deposits east of the Volga River, extending southeast of the Mayakovsky settlement.
11. In 1949, the Combine employed about 10,000 workers in the production departments, plus an undetermined number of workers employed in the auxiliary and secondary installations. Three 8-hour shifts were worked in the production departments and in the power station. Almost 60 percent of the workers were women.
12. The entire area of the Combine was surrounded by a high wooden fence reinforced with barbed wire. Some installations, especially the alcohol factory and the department for catalysts, were fenced-in individually and were under strict guard. There were watchtowers along the fence surrounding the entire plant area. The plant was guarded by plant police. Some German experts employed in the plant were kept under surveillance by officials of the MVD.

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1. ☐ Cement: According to available information, the carbon black factory of the Rubber Combine in Yaroslavl is the largest Soviet carbon black factory known to date. At the end of the war the annual capacity of the factory was approximately 11,000 tons of carbon black.

Attachment: Location sketch of the Yaroslavl Rubber Combine with 2-page Legend.  
 (Distribution: State, Army, Navy, Air, OGD)

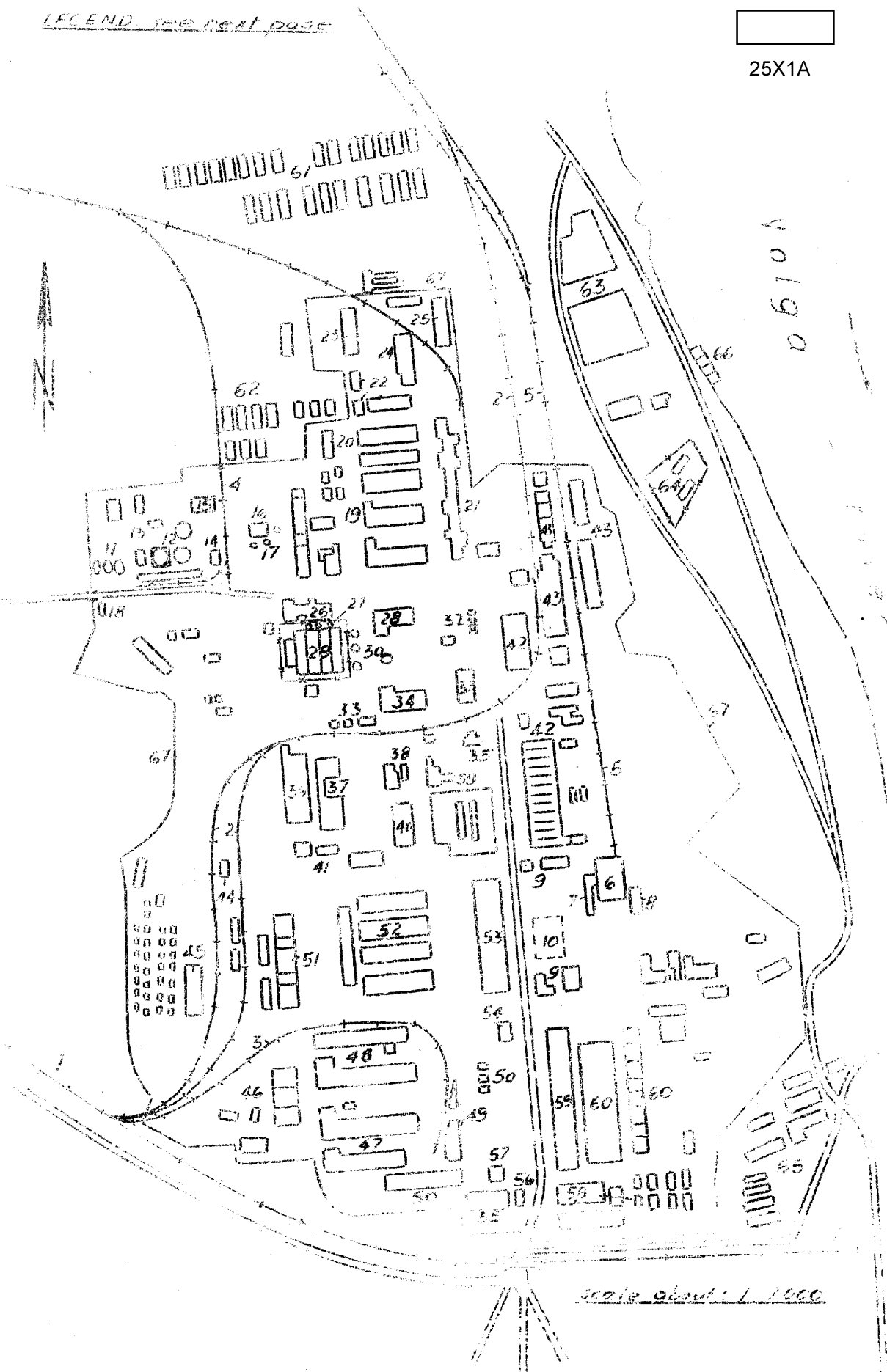
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Layout Sketch of the Yarak Rubber Combine in Yaroslavl

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Legend for Sketch No. 1:

1. Yaroslavl-Vologda double-track railroad line.
2. Railroad track running through the entire plant.
3. Railroad track leading to the crude oil depot.
4. Railroad track leading to the alcohol factory and to the installations for rubber synthesis.
5. Industrial track leading to the power plant. The track ascends gradually to the roof of the boilerhouse. Coal and peat shipments arrived on this track. It passed through various tunnels.
6. Thermal power plant with a boilerhouse in which there were 5 steam boilers equipped with travelling grates (Wanderrosten) in operation. Each boiler had a sheet metal smokestack extending about 8 meters above the roof. There were 5 turbines in the turbine house.
7. Walled enclosure for slag and ashes.
8. Repair shop of the power plant.
9. Closed transformer station, equipped with switch installations.
10. Large square with open air transformers.
11. Three oval alcohol tanks, made of camouflage painted steel plates, about 20 meters long, about 10 meters across, and 15 meters high. Various kinds of denatured alcohol of different colors, including methyl alcohol ( $\text{CH}_3\text{OH}$ ), were stored in these tanks.
12. Three round steel plate tanks, each about 10 meters high and 15 meters in diameter. One tank was surrounded by a wall. The tanks were camouflage painted. Alcohol and acetylene were stored in these tanks.
13. Alcohol purifying installation equipped with distilling installations.
14. Building with pumps used to pump the alcohol to the various departments and to tanks.
15. Alcohol distillery.
16. Buildings with cellars in which there were large tubs used in fermenting grain.
17. Storage bin of the alcohol distillery. Mostly grain was stored here.
18. Gatekeeper's house and guard house.
19. SK 1 installation for the production of synthetic rubber, consisting of a group of buildings including 5 large workshops. Between the buildings were several small and large tanks, some of them with sliding valves operated by hand wheels from the outside. Catalysts used in rubber production were produced in some of the annex buildings. In one of the workshops a great number of portable autoclaves were used. After having been crushed thoroughly, the raw rubber material was heated in the autoclaves, then crushed again, and finally processed in kneading machines where other ingredients were added. The finished product was shaped into cylinders, weighing about 50 kg, which were packed in sacks and stored in the warehouse. Several of the main buildings were connected by conveying equipment.

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20. Shed with loading ramp for trucks.
21. Department for finishing the synthetic rubber. It was connected with the SK 1 Department by a traveling crane which was used to carry autoclaves. A conveyor belt led to the new warehouses of the SK 1 Department.
22. Workshops for synthetic rubber production.
23. Large pipe-laying workshop with welding equipment.
24. Packing shop. The building consisted of 3 large rooms.
25. Two newly built warehouses of the SK 1 Department.
26. Installation for the processing of solvents.
27. Three small vertical tanks of the water distilling installation.
28. Laboratory of the installations producing vulcanization accelerators and other vulcanization items.
29. Workshop for the production of vulcanization accelerators. A three-story structure surrounded by a multiple barbed-wire fence. At the entrance gates were warning posters with the inscription "Restricted Zone."
30. Three small tanks and one vertical tank, 10 meters high and 7 meters in diameter, used for the storage of solvents.
31. Installation for the production of additional auxiliary products (Hilfsmittel) for vulcanization.
32. Several horizontal tanks, each 5 meters long and 2 meters in diameter. The use of these tanks was unknown.
33. Several buildings housing messhalls, kitchens, and food warehouses.
34. Office building.
35. Transformer station.
36. Warehouse for waste rubber and used rubber.
37. Installation equipped with tensile-testing machinery and with mills used to crush waste rubber and used rubber.
38. Warehouse for chemicals and solvents used by the rubber reclaiming department.
39. Installations for reclaiming used rubber and crude rubber scraps. Large amounts of caustic soda, sulphuric acid, and various softeners were processed here.
40. Installation for the production of rubber soles. About 10 percent reclaimed rubber was used and softeners, filling agents, such as carbon black, and minerals were added to the crude rubber. The amount of rubber used in making the various types of soles was 40 to 50 percent for tacked-on soles, 50 to 55 percent for stitched-on soles, and 55 to 60 percent for glued-on soles.
41. Installation for the production of rubber clothing and rubber utility items for technical purposes and general requirements.
42. Cord factory. For the production of textile linings. For rubber products, with

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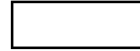
auxiliary installations such as dressing shops, spinning and weaving mills, and a warehouse.

43. Several warehouse buildings.
44. Several new structures. Use undetermined.
45. Installation for the production of rubber solutions and lacquers. Waste products were extensively used in this production.
46. Warehouse for asbestos ore.
47. Installation for processing asbestos into linings for rubber products, gaskets, packings, brake linings, etc.
48. Installations for dressing all kinds of flux materials (Zuschlagstoffe). The equipment consisted mainly of rolling trains and sets of millstones. The main raw materials were kaolin, chalk, talcum, and other mineral flux materials.
49. Tank installations for crude oil, gasoline, and solvents.
50. Carbon black factory.
51. Warehouse for crude rubber.
52. Installation for the production of motor vehicle tires, including casings and tubes for low and high pressure tires, with shallow or heavy treads; solid rubber tires, pneumatic tires, and rubber plates for caterpillar tracks. The main departments of this installation were the departments for the preparatory treatment of rubber, the department for mixing rubber with flux materials, the rolling departments, the calender department, the pressing department for shaping tires, and the gluing shop.
53. Warehouse for finished products.
54. Garage.
55. Warehouse. Its use was undetermined.
56. Gatekeeper's house. People entering the plant were checked here.
57. Billets for the guard unit.
58. Main administration and office building.
59. Warehouse for the workshops.
60. Machine shops with foundry. Large repairs were done here and press molds used in shaping automobile tires were produced in these installations.
61. Warehouse for finished products, particularly automobile tires, located outside the plant area.
62. Chemical installation of undetermined use.

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- 63. Sawmill and factory manufacturing crates for packing.
  - 64. Concrete factory of the Yarpromstroy Construction Enterprise.
  - 65. Office buildings, workshops, and warehouses of the Yarpromstroy Construction Enterprise.
  - 66. Landing piers, mainly for cargo barges.
  - 67. Fence surrounding the Combine.
- Unnumbered buildings could not be identified.

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